

REMARKS

Claims 1, 3-12 and 15-19 are now in this application. Claims 1 and 3-17 are rejected. Claims 13 and 14 are cancelled. Claims 1, 3-12 and 15-17 are amended herein to clarify the invention, to broaden language as deemed appropriate and to address matters of form unrelated to substantive patentability issues. New claims 18 and 19 are added.

Applicants herein traverse and respectfully request reconsideration of the rejection of the claims and objections cited in the above-referenced Office Action.

The drawings are objected to for various informalities and for failing to show every feature of the invention specified in the claims. Proposed drawing amendments of Figs. 1, 1a and 2, having changes indicated in red, accompany this amendment. Additionally, a Letter to the Draftsman pursuant to MPEP 608.02(r) is provided herewith. It is submitted that the amendments, in conjunction with clarifying revisions to the specification, address each of the Examiner's concerns. Therefore, withdrawal of the objection to the drawings is requested. The applicants elect to delay filing corrected formal drawings until subsequent to the receipt of a Notice of Allowability as per PTOL-37 and CFR §1.85(c).

The Office Action states that the specification and abstract are objected to for various informalities, and indicates that a substitute specification in proper idiomatic English and with appropriate headings, line spacing and indentations is required. Applicants submit herewith a substitute specification and abstract wherein amendments are effected to place the text thereof into proper English in accordance with 37 CFR 1.125(c), to address each and every one of the noted informalities, and to comply with the requirements of 35 U.S.C. §112, first paragraph. Also accompanying this amendment is a reproduction of the original specification with markings indicating the amendments effected in the substitute specification in accordance with MPEP §608.01(q) and 37 CFR 1.125(b). No new matter is added. Entry of the substitute specification and abstract, and withdrawal of the objections to the specification and abstract, are respectfully requested.

Claims 1 and 3-17 are rejected under 35 U.S.C. § 112, first paragraph, as not being enabled by the specification. Applicants herein respectfully traverse this rejection.

The determination of enablement turns on whether the specification contains a sufficient disclosure to enable one skilled in the art to practice the invention without the exercise of undue experimentation. What constitutes undue experimentation is determined using a standard of reasonableness. Factors to be considered include the quantity of experimentation necessary, the amount of

direction or guidance presented, the existence of working examples, the state of the prior art, the nature of the invention, the predictability of the art and the breadth of the claims. *Ex parte Forman*, 203 U.S.P.Q. 546 (BPAI 1986).

As noted above, the specification is revised to clarify the features shown in the drawings and as presently claimed. The nature of certain of the translated phrases in the specification which may have obscured a facilitated understanding of the invention has been clarified within the context of the disclosure as originally filed. Applicants submit that the claims are fully enabled by the specification as amended, insofar as one skilled in the art could readily practice the claimed invention without undo experimentation. Therefore, reconsideration of the rejection and allowance of the claims are earnestly solicited.

Claims 1 and 3-17 are rejected as indefinite under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter of the invention as a result of informalities stated in the Office Action. The claims are amended to remove or correct the informalities noted in the Office Action. Therefore, reconsideration of the rejection of remaining claims 1, 3-12 and 15-17 and their allowance are earnestly requested.

Claims 1, 4-8 and 10-15 are rejected as obvious over Kumar et al. (US 5,512,131) in view of Columbus (US 4,233,029) under 35 U.S.C. §103(a). Claims

13 and 14 are cancelled, rendering their rejection moot. The applicants herein respectfully traverse this rejection as pertaining to the remaining rejected claims.

For a rejection under 35 U.S.C. §103(a) to be sustained, the differences between the features of the combined references and the present invention must be obvious to one skilled in the art.

It is respectfully submitted that a *prima facie* case of obviousness could not be established in rejection of amended claims 1, 4-8, 10-12 and 15 now remaining in the application. "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." MPEP §706.02(j) "Contents of a 35 U.S.C. §103 Rejection".

The present invention relies upon open recesses which are capillarily inactive, and capillary gaps spaced apart by the recesses. The liquids flow along liquid guideways defined by the capillary gaps which are formed by the spacing apart

of elevations on the body from the opposite body, and which are spaced apart at less of a height from the opposite body (eg. support plate) than the recesses forming open regions serving to block capillary flow between adjacent capillary gaps. It is respectfully submitted that no such teaching is present in either Kumar et al. or Columbus.

Kumar et al. discloses at column 6, lines 3-5 that the bottom sides of the elevations of the stamp are brought into contact with portions 29 of a surface 30 of a support plate. As expected, this is inherent in a stamping step. In contrast, however, the invention relies upon spacing between the bottom side of the elevations and the confronting surface of the opposite body such that the elevations are not in contact with the opposite body, whereby capillary gaps are formed therebetween.

Columbus discloses a device with an upper part in contact with a bottom part via opposing faces, where V-shaped elevations of the upper and bottom plate meet each other. It is clear that liquid transport is accomplished through the recesses between the V-shaped elevations, which is exactly the opposite of what occurs in accordance with the claimed invention.

The combination of references therefore fails to teach or suggest all claim elements. Thus, it is respectfully submitted that the rejected claims are not obvious in view of the cited references for the reasons stated above. Reconsideration of the

rejections of claims 1, 4-8, 10-12 and 15 now remaining in the application and their allowance are respectfully requested.

Claims 1, 3-8 and 10-15 are rejected as obvious over Kim et al. (WO97/33737) in view of Columbus (US 4,233,029) under 35 U.S.C. §103(a). Claims 13 and 14 are cancelled, rendering their rejection moot. The applicants herein respectfully traverse this rejection as pertaining to the remaining rejected claims.

Kim et al., which is referred to in the background section of the specification, achieves flow of liquid through what would be equivalent to the recesses of the present invention, which serve to block flow in accordance therewith, rather than between what the Examiner terms “spacing means” 26 and the “opposite body” 30.

As noted above, Columbus is similarly deficient regarding teaching relating to the claimed subject matter, in accordance with which liquids flow along liquid guideways defined by the capillary gaps which are formed by the elevations on the body which are spaced apart at less of a height from the opposite body (eg. support plate) than the recesses forming open regions serving to block capillary flow between adjacent capillary gaps.

The combination of references therefore fails to teach or suggest all claim elements. Thus, it is respectfully submitted that the rejected claims are not obvious in view of the cited references for the reasons stated above. Reconsideration of the

rejections of claims 1, 3-8, 10-12 and 15 now remaining in the application and their allowance are respectfully requested.

Claims 16 and 17 are rejected under 35 U.S.C. §103(a) as obvious over the Kim et al. reference (WO97/33737) in view of the Columbus reference (US 4,233,029), and further in view of Zanzucchi et al. (US 5,681,484) and Maracus et al (US 5,772,966), respectively.

It is respectfully submitted that the secondary Zanzucchi et al. and Maracus et al. references both fail to provide what is missing in the Kim et al. and Columbus et al. references, as noted above. Therefore, the combination of references fails to teach or suggest all claim elements, as properly required to establish a *prima facie* case of obviousness. Thus, it is respectfully submitted that the rejected claims are not obvious in view of the cited references for the reasons stated above. Reconsideration of the rejections of claims 16 and 17 and their allowance are respectfully requested.

Dependent claims added and are submitted as patentable based on the subject matter cited therein in addition to the subject matter of claims 1 and 4. Favorable action on the merits is earnestly solicited.

Applicants respectfully request a two (2) month extension of time for responding to the Office Action. Please charge the fee of \$205 for the extension of time to Deposit Account No. 10-1250.

In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited. Please charge any deficiency or credit any overpayment to Deposit Account No. 10-1250.

Respectfully submitted,

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enc: Letter to Draftsman with proposed drawing amendments of Figs.1 and 2;
Substitute Specification; and Marked reproduction of original specification.

APPENDIX I**AMENDED CLAIMS WITH AMENDMENTS INDICATED THEREIN
BY BRACKETS AND UNDERLINING**

1. (Amended) A device for transporting liquids along predetermined guideways, comprising:

[which are provided in]a body;[, whereby the structures forming the guideways are attached to a corresponding complementarily shaped]

an opposite body[, wherein] attachable to said body in juxtaposition thereto and having a shape complementary to a corresponding shape of the body, said body being [is] provided with elevations and recesses [and elevations] on a side thereof which faces a confronting surface of said opposite body when attached thereto, surfaces of said elevations and recesses facing said confronting surface being spaced apart therefrom a distance such that said elevations and recesses respectively define, in conjunction with said confronting surface, [which form] capillary gaps for transporting liquids [exclusively] by capillary forces and recessed regions therebetween which are capillarily inactive and having a width of at least 1,000 μm and a depth of at least 1,500 μm , thereby preventing transport of liquids between adjacent ones of said capillary gaps by capillary force; and

at least one liquid supply [means (3) adapted to be dosed is associated] for supplying liquid dosing to said capillary gaps[with the elevations and means for spacing apart are provided, whereby between each adjacent elevations there remains such a large recess, having a width of at least 1,000 μm and a depth of at least 1,5000 μm that in the range of the recesses a transport of liquids by capillary force is eliminated].

3. (Amended) A device as claimed in claim 1, wherein said at least one liquid supply includes a discrete liquid supply for each of said capillary [gap is provided with a discrete liquid supply means] gaps.

4. (Amended) A device as claimed in claim 1, wherein the body [supporting the elevations and the recesses] is [formed by] in a form of a plane cover plate.

5. (Amended) A device as claimed in 4, wherein the opposite body is [formed by] in a form of a plane support plate.

6. (Amended) A device as claimed in [5]18, wherein the [spacing means] spacers are components of the support plate.

7. (Amended) A device as claimed in claim [4, characterized in that] 19, wherein the [spacing means] spacers are components of the cover plate.

8. (Amended) A device as claimed in claim [1]18, [characterized in that the spacing means] wherein the spacers are arranged in the form of [regularly distributed] bars spaced apart in a regular pattern.

9. (Amended) A device as claimed in claim [1]18, [characterized in that the means for spacing apart the body and the opposite body] wherein the spacers are designed as discrete spacer elements sealingly insertable between the body and the opposite body, said spacer elements being given a [preselectably] defined height [(x)] in dependence on characteristics of the fluid to be directed along a course defined by the capillary [gap] gaps.

10. (Amended) A device as claimed in claim 1, [characterized in that] wherein the [capillary gap forming] elevations are [designed as through bars] defined by generally bar-shaped structures.

11. (Amended) A device as claimed in claim 5, wherein the cover plate is [adapted to be attached] removably attachable to the support plate [detachably and] in a manner substantially free of tensions in different directions.

12. (Amended) A device as claimed in claim 1, [characterized in that] wherein, on the body, a plurality of capillary gaps is provided independently from each other and with an inlet and outlet each.

15. (Amended) A device as claimed in any one of claims 1, 3-14, wherein said opposite body is in a form of one of a plane, planar [or] and substrate [plates] plate provided with recesses [are used as the support plates].

16. (Amended) A device as claimed in any one of claims 1, 3-14, wherein said opposite body is in a form of [bio-chips] a bio-chip [are used as the support plates].

17. (Amended) A device as claimed in any one of claims 1, 3-14, wherein said opposite body is in a form of one of a micro-titer [plates or] plate and a nano-titer [plates are used as the support plates] plate.